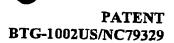
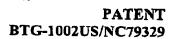
## Listing of Claims

- 1. (Currently amended) A semiconductor device comprising:
- a substrate;
- a barrier film having a monolayer of elemental barium atoms on said substrate; and
  - a metallic material directly on in physical contact with said barrier film.
  - 2. (Currently amended) A semiconductor comprising:
  - a semiconductor substrate material having a surface;
- a barrier film in direct contact with said semiconductor substrate surface, said barrier film having a layer comprising elemental barium atoms on said surface;
- a conductor directly on in physical contact with said barrier film, said conductor having a tendency to diffuse into said semiconductor substrate material if in direct contact therewith; and wherein said elemental barium atoms are between said conductor and said semiconductor substrate such that said layer serves as a barrier, inhibiting diffusion of the conductor into the semiconductor substrate material.
- 3. (Original) A semiconductor device according to claim 2, wherein said barrier film has a thickness of not more than approximately 100Å.
- 4. (Original) A semiconductor device according to claim 2, wherein said barrier film has a thickness of not more than approximately 20Å.
- 5. (Original) A semiconductor device according to claim 2, wherein said barrier film has a thickness of not more than approximately 5Å.
- 6. (Previously presented) A semiconductor device according to claim 2, wherein said barrier film is a single layer of elemental barium atoms on said surface of said substrate material.



- 7. (Previously presented) A semiconductor device according to claim 2, wherein said barrier film comprises a plurality of contiguous layers of elemental barium atoms located on said surface of said substrate material.
- 8. (Original) A semiconductor device according to claim 2, in which said substrate material is a semiconductor.
- 9. (Original) A semiconductor device according to claim 2, in which said substrate material is a silicon semiconductor.
- 10. (Original) A semiconductor device according to claim 2, in which said substrate material is an insulating material.
- 11. (Original) A semiconductor device according to claim 2, in which said substrate material is silicon oxide.
- 12. (Original) A semiconductor device according to claim 2, in which the conductor is a metal.
- 13. (Original) A semiconductor device according to claim 2, in which the conductor comprises copper.
- 21. (Previously presented) A semiconductor device according to claim 1, wherein said barrier film comprises a plurality of contiguous monolayers of barium atoms located on a surface of said substrate material.
  - 23. (Currently Amended) A semiconductor device comprising:
  - a semiconductor substrate;
- a barrier film comprising elemental barium atoms, having a thickness in the range of approximately 5 Å to approximately 100 Å in direct contact with said substrate; and

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a metallic material positioned directly on in physical contact with said barrier film such that said elemental barium atoms are between said metallic material and said semiconductor substrate.

- 24. (Previously presented) The semiconductor device according to claim 23, wherein said barrier film has a thickness in the range of approximately 5 Å to approximately 20 Å.
- 25. (Previously presented) The semiconductor device according to claim 23, wherein said substrate comprises semiconductor silicon, and said barrier film directly contacts said substrate.
- 26. (Previously presented) The semiconductor device according to claim 2, wherein said barrier film has a thickness in the range of approximately 5 Å to approximately 20 Å.
- 27. (Previously presented) The semiconductor device according to claim 1, wherein said substrate comprises semiconductor silicon, and said barrier film directly contacts said substrate.
- 28. (Previously presented) The semiconductor device according to claim 8, wherein barrier film directly contacts said substrate.